Understanding the Pattern for Powers of 10

Adapted from: Georgia Department of Education

Common Core Georgia Performance Standards Framework *Fifth Grade Mathematics • Unit 3*

Directions: Your job is to construct understanding about how the powers of 10 operate in the base 10 number system. Write down patterns. Make conjectures. Be ready to defend your thinking.

PART ONE

1. Start with any whole number, for example 15.
2. Multiply that number by 1000, 100, 10, 0.1, and 0.01.
3. What is happening? Is there a pattern?
4. What do you think would happen if you multiplied your number by 1,000,000? 0.00001?

PART TWO

1. Pick any decimal as your number, for example 15.3.
2. Multiply that number by 1000, 100, 10, 0.1, and 0.01.
3. What is happening? Is there a pattern?
5. What do you think would happen if you multiplied your number by 1,000,000? 0.00001?

PART THREE

1. Start with any whole number, for example 18.
2. Divide that number by 1000, 100, 10, 0.1, and 0.01.
3. What is happening? . Is there a pattern?
4. What do you think would happen if you divided your number by 1,000,000? 0.00001?

PART FOUR

1. Pick any decimal as your number, for example 10.8.
2. Predict what will happen when you divide that number by 1000, 100, 10, 0.1, and 0.01.
3. After working out the problem, is your prediction correct? Why or Why Not?
4. Is there a similar pattern that you recognize?